WORKING TO CONTROL DIABETES

Foreword

Diabetes is an important public health problem in Michigan. Over 250,000 Michigan residents have diagnosed diabetes and an additional 200,000 have undiagnosed diabetes. It is the seventh leading cause of death in the state and one of the ten leading causes of premature death. This disease is especially common among the elderly and minority groups such as Blacks, Hispanics and Native Americans.

Diabetes can result in other health problems such as amputations, blindness, heart and blood vessel disease and kidney failure. Given that these complications can often be prevented or alleviated through proper medical management, patient knowledge and self-care practices, it is imperative that all persons who have diabetes receive appropriate care and education.

The Upper Peninsula of Michigan contains many elderly people with diabetes and a relatively large percentage of residents with diabetes who are Native American. Access to medical care in this rural area is poor due to its sparse population and a high unemployment rate. As a result, many people in the Upper Peninsula with diabetes are at high risk for poor management of the disease and for long-term, degenerative diabetes complications.

In response to the needs of these persons with diabetes, the Michigan Department of Public Health has supported since 1985 the development and continued efforts of the Upper Peninsula Diabetes Outreach Network (UPDON). UPDON provides persons with diabetes living in the Upper Peninsula with help in managing their diabetes through comprehensive assessment, individualized education, and referrals to specialty care. Led by the Western Upper Peninsula District Health Department, UPDON includes numerous local public and private health care agencies, hospitals and physicians committed to quality care. Due to the coordinated efforts of these health care agencies and providers, UPDON reaches all areas of the Upper Peninsula.

UPDON has been a very successful project. Individuals who required specialty care for eye, foot or blood pressure problems have been seen by the appropriate health care provider. Self-care problems experienced by the people participating in UPDON such as poor diet, inappropriate foot care and difficulty monitoring blood glucose levels have been resolved through the personal, one-to-one patient education that UPDON provides. These accomplishments will prevent or reduce the complications of diabetes such as uncontrolled high blood pressure, foot and leg ulcers, amputations and vision loss.

Based upon the accomplishments of UPDON and the needs of other Michigan residents who have diabetes, especially minorities, the Department of Public Health is supporting the development of a similar referral network in Genesee county. Led by the Genesee County Health Department, this network will be formed by the county's many health care agencies and will focus on the numerous Black, Hispanic and Native Americans who live in this primarily urban area. Based upon the experience from UPDON and Genesee county, diabetes outreach networks may be implemented in other areas of the state, making help available to more Michigan residents in need.

Raj M Wiener
State Health Director

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Since 1985, the Michigan Department of Public Health has sponsored a home care network for persons with diabetes living in the Upper Peninsula of Michigan. Through the coordinated efforts of local hospitals, local health departments and home care agencies, this system provides individualized plans of care to persons who are at high risk for diabetes complications. As a result of these efforts, the majority of individuals enrolled in this system have been referred to and have seen the recommended health care providers. Furthermore, many of the clients have resolved their problems with specific self-care practices and have demonstrated adequate management of their diabetes care.

Diabetes is an important public health problem in Michigan. It is one of the ten leading causes of death in the state and one of the leading causes of premature death. Diabetes is a significant component of health care expenditures in Michigan with the hospitalization costs of diabetes estimated at $1 billion per year.[1]

Diabetes is a chronic disease in which foods, primarily starches and sugars, cannot be stored for energy due to the body's inability to produce or use insulin, a hormone that regulates the amount of sugar in the bloodstream. This disease is especially common among women, the elderly and minority groups such as Blacks, Hispanics and Native Americans. Diabetes is associated with many serious health problems particularly amputations, blindness, high blood pressure, heart and blood vessel disease and kidney failure.

Practical and effective treatments for many complications of diabetes are now available. Proper medical management, patient knowledge and self-care practices are critical for successful control of the disease and a reduction of its complications. Amputations can often be prevented through proper and thorough daily foot and limb examinations. If diabetic retinopathy is detected early, treatment is now available that can often halt its progression to blindness. Furthermore, with appropriate blood pressure management, decline in kidney function can be slowed and the risk of heart and blood vessel disease minimized.

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The Upper Peninsula Diabetes Outreach Network

The Upper Peninsula of Michigan contains many people who have diabetes, with many elderly living in this area and a relatively large percentage of residents who are Native American. The area is rural and sparsely populated with chronically high unemployment. As a result, access to medical care is poor. Consequently, many people in the Upper Peninsula with diabetes are at high risk for poor management of the disease and for long-term, degenerative diabetes complications.

The Upper Peninsula Diabetes Outreach Network (UPDON) is designed to provide comprehensive assessment, referral, and follow-up care for persons with diabetes residing in the Upper Peninsula of Michigan who are at high risk for developing complications. Patients are referred into the system by local hospitals, by other health agencies, and by physicians. An individualized plan of care is developed for each patient referred into UPDON. The plan may include direct care, instruction to develop self-care skills, and calls to be made on behalf of the client. It also may include secondary referrals to specialists for foot care and eye care, or to a primary care provider for high blood pressure control. Services are provided until all problems are addressed and appropriate care is given.

Due to extensive participation on the part of numerous public and private health care agencies, UPDON reaches all areas of the Upper Peninsula. Referrals into the Network are being made by 19 of 21 Upper Peninsula acute care hospitals and one Indian Health Center. The home care service is being provided by five district health departments, five private home care agencies and two Indian Health Centers.

In order to render the best quality care to clients served by UPDON, a great deal of attention has been given to professional education. Efforts are being made to assure that all UPDON personnel are up-to-date in their understanding of diabetes so that medical advances are made available to the clients. Regularly scheduled in-services are provided to the nursing staffs of agencies participating in UPDON. In addition, UPDON helps to sponsor an annual diabetes conference for health care providers in the Upper Peninsula. Updates, activities, and project results are shared with the UPDON staff through a quarterly newsletter.

Upon receiving a referral into the UPDON system, a home health nurse makes several visits to the patient's home in order to assess

the patient's needs and to develop an individualized plan of care. The patient's self-care practices are evaluated, blood pressures are taken, feet are examined, and questions are asked about the most recent ophthalmological examination. Referrals for specialty care are provided where appropriate. A similar post-nursing care assessment is completed at the conclusion of service or after sixty days of service, whichever comes first. The nurse reevaluates the patient six and twelve months after the post-nursing assessment. At these reevaluations, the nurse assesses previous problems and determines whether referrals that had been made were completed.

Figure 1
Age Distribution

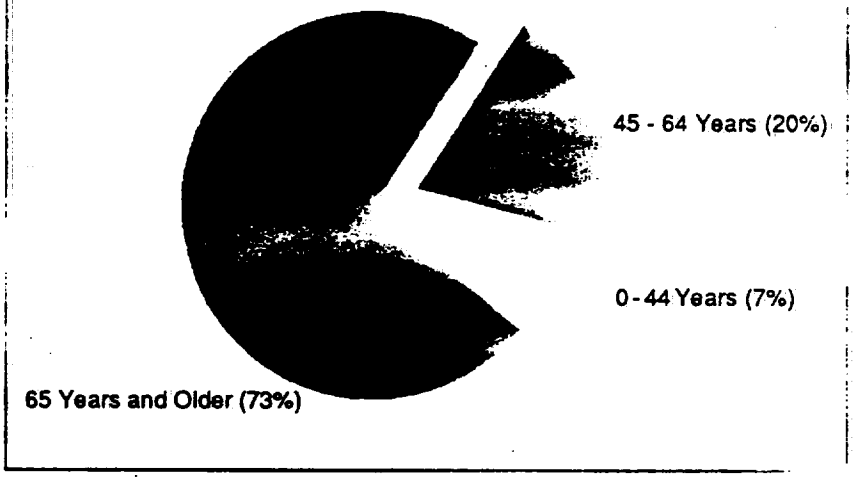
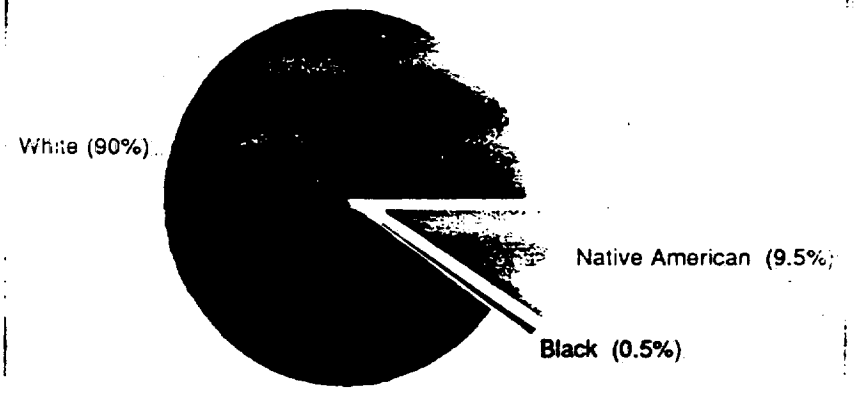


Figure 2
Race Distribution



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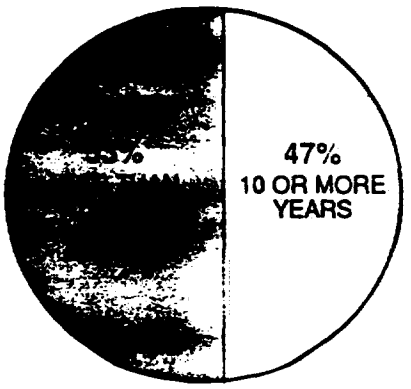
Characteristics of UPDON Clients

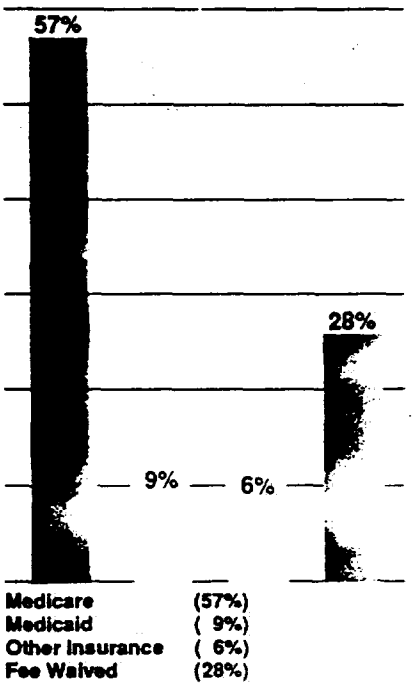
As of September 1989, 1,487 people (approximately eighteen percent of all persons with diabetes living in the U.P.) have completed the home care service. The UPDON system has served many elderly persons, a group at high risk of developing diabetes. The majority of clients are sixty-five years of age or older and almost all are over age forty-five (Figure 1). Furthermore, almost ten percent of the project participants are Native American, another high risk group (Figure 2).

Figure 3
Duration of Diabetes
(in percent)



Consistent with the age distribution of the clients and the diagnosis of diabetes, the majority of clients, 63 percent, are female. Furthermore, nearly half of the clients have had diagnosed diabetes for more than ten years (Figure 3), putting them at increased risk for diabetes complications.

Figure 4
Source of Payment
(in percent)



Over half of the UPDON participants have Medicare coverage for the home visit. Many of the clients have financial problems as is indicated by the fact that nine percent of the home visits are covered by Medicaid. Additionally, over one-quarter of the clients lack any form of third party insurance coverage for home visits and had their fee waived (Figure 4).

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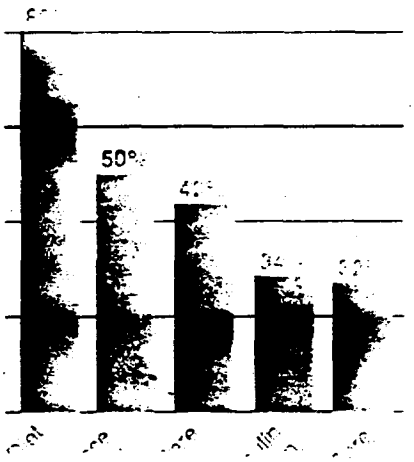
The Clients' Health Needs

Figure 5
Five Most Frequently Cited Self-Care Problems
(in percent)



As shown in Figure 5, the majority of the clients have problems managing their diet and monitoring their blood sugar levels. Three other client problems cited frequently are: inappropriate foot care, difficulty with injecting insulin, and inadequate skin care (See Figure 5 Above). These five problems can all be addressed and ameliorated through client self-care education and personal in-home counseling as provided through UPDON.

The need for referrals for specialty care is greatest for referral to an ophthalmologist (Figure 6).

The criterion for an ophthalmological referral is the Michigan Department of Public Health Diabetic Retinopathy Guidelines. For most of the people in the UPDON system, these guidelines recommend yearly visits to the ophthalmologist.

Referrals to a physician for high blood pressure control have been required for approximately two-fifths of the participants. All clients are considered to require a referral for hypertension if they have an average diastolic blood pressure of 90 mmHg or above and/or an average systolic of 140 mmHg or above (160 mmHg or above for individuals 65 and older.)

A referral for foot care has been required for over half of the clients. Nurses refer the client for foot care if conditions such as blisters, calluses, lesions, rashes or discolorations are discovered during the assessment.

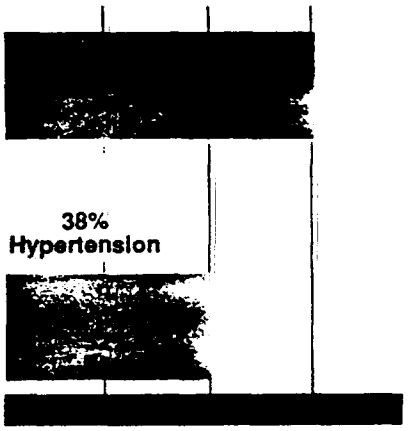
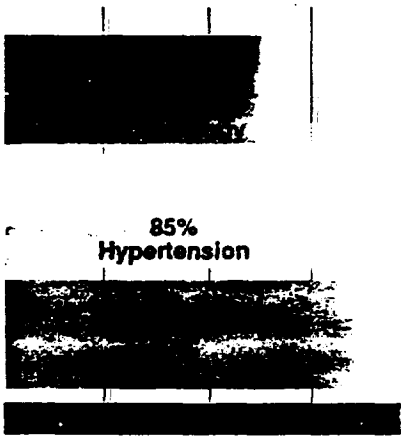


Figure 6
Patients Requiring a Referral
(in percent)

Results and Client Progress

Most of the clients who required a referral for foot care, eye care, or high blood pressure control received and accepted one by the conclusion of service (Figure 7 below).

Figure 7
[illegible] Who Received and Accepted a Referral
(in percent)



It is clear, therefore, that the nurses are making timely and appropriate referrals. Furthermore, the clients appear to understand and accept the need to see the recommended health care provider.

One year after the conclusion of service, many of those who had been referred were seen for specialty care. Sixty-seven percent of those referred were seen for foot care and 64 percent were seen for hypertension control. The percent seen for ophthalmological care was somewhat lower at 44 percent (Figure 8 below). Most of the participants who did not complete an ophthalmological referral state that financial constraints and inadequate transportation had kept them from receiving the recommended health care.

The benefits of specialty care are greatest when this care is part of an integrated health care network such as UPDON. This fact is evident in the case of a 69 year old Native American woman who entered the UPDON system with an amputation of the toe and existing foot callus. The UPDON nurse instructed this woman in proper foot care and referred her to a podiatrist for evaluation [illegible] were necessary in order to prevent further amputations. The Sault Tribe of the Chippewa Indians, realizing that proper foot care is important

Percentage of Patients Seen for Secondary Care of an UPDON Referral

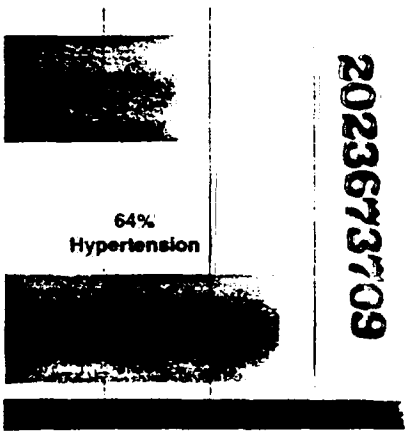
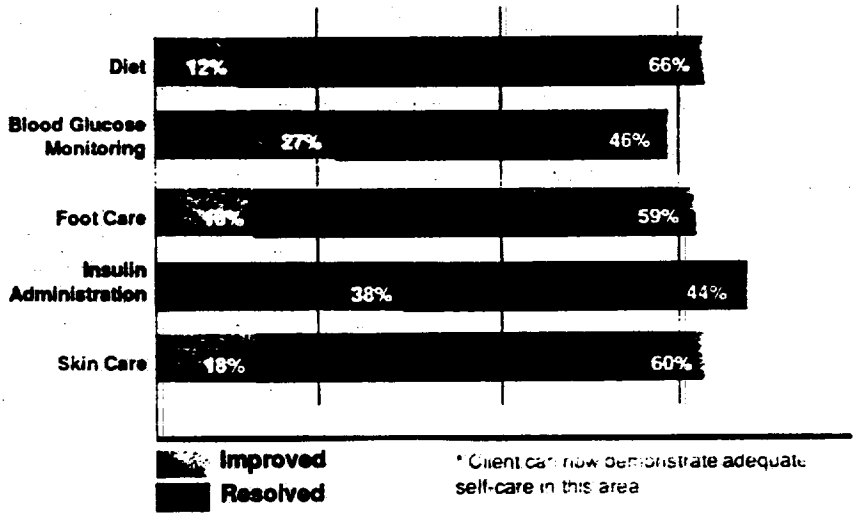


Figure 9
Percent of Self-Care Problems
Improved or Resolved* by the Conclusion of Service



for persons with diabetes, provided *funds for the shoes. The coordi-* ***states that this woman's feet were saved from amputation by the co-ordinated efforts of the UPDON system.***

By the conclusion of home care service, the problems that required education for self-care have improved or have been resolved for many of the clients (Figure 9). For example, 78 percent of those persons who had a problem with diet had either resolved the problem or had improved their dietary skills. Seventy-three percent of those who had problems monitoring their blood sugar had either resolved this difficulty or had made some improvement. The success of the self-care education is particularly evident one year after the conclusion of service. The participants not only maintained the progress they had made by the end of service, they made further gains. For example, 92 percent of those who had problems with diet upon entering the program were able to demonstrate, one year after

Many of the UPDON clients need to improve their dietary skills in order to control their weight. One 67 year old male lost fifty pounds through a program of diet, exercise and blood glucose monitoring. Due to frequent education sessions with an UPDON nurse, this man is no longer obese and can control his diabetes without using insulin.

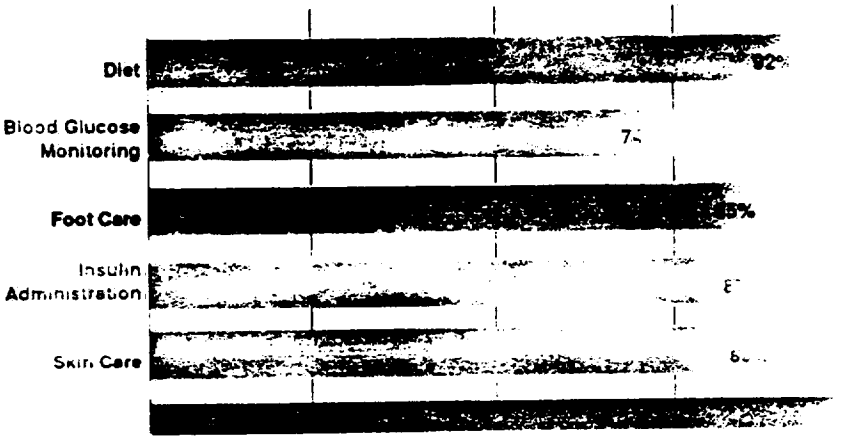
receiving service, that they know how to manage their diet. Similarly, 74 percent of those with difficulty monitoring their blood sugar were able to demonstrate adequate self-care skills in this area (Figure 10).

UPDON is proving to be a very effective system for providing clients with needed referrals, with education about the need for specialty care and with education regarding self-care. UPDON is distinctive in the individualized care and attention provided to each participant. Furthermore, the coordinated network of hospitals, local health departments and home care services encompasses the entire Upper Peninsula and thereby serves a sizable percentage of persons with diabetes in the Upper Peninsula.

The operating costs of the UPDON project, excluding the expenses for start-up and development, are $122 per patient for one year of service. In future networks, project demonstration and evaluation costs will no longer be necessary and it appears the network can then be implemented for $85 per person. The education and referral network provided in this program could also lead to savings through reduced hospitalization costs.

A comparable diabetes education and referral program conducted in Saginaw showed an average reduction in hospitalizations by .7 days per year per person.[2] This would translate into a yearly savings of $438 per person in hospitalization costs.[3]

Figure 1:
Percent of Self-Care Problems Resolved* After One Year



* Client can now demonstrate adequate self-care in this area

Due to the success of UPDON and the needs of other Michigan residents who have diabetes, especially minorities, a similar referral network is being developed in Genesee county. This network will involve the county's many health care agencies and will focus on the Black, Hispanic and Native American communities particularly in the urban area of Flint. By developing and implementing a referral network in an urban setting with other groups at high risk for diabetes complications, the Genesee county project will complement the efforts of UPDON and broaden the referral network concept. Based upon the experience from UPDON and Genesee county, diabetes outreach networks may be implemented in other areas of the state, making help available to more Michigan residents in need.

Footnotes & Credits

[1] Center for Health Promotion. Diabetes: Opportunities for Quality Care and Cost Containment in Michigan. Lansing: Michigan Department of Public Health, P.3, 1987.

[2] Halpern, M., J. Beasley, E. A. Jensen, M. Gebhard, D. Dodson, and S. Crawford, "Intensive Follow-up Aids Diabetes Self-Management: Results of the Saginaw Project," paper delivered at 6th Annual CDC Diabetes Control Conference, May 10, 1982.

[3] In 1987, the average cost of one day of hospitalization care for all admissions with a diagnosis of diabetes mellitus was $625.79; Michigan Department of Public Health, Office of the State Registrar and Center for Health Statistics, Michigan Inpatient Hospital Data, Table 2a, 1987.

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